

Exploring the effect of selected biographical variables on the dimensions of the Leadership Scale for Sport: A multivariate analysis

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Abstract

In a sport context, the coach is often referred to as a leader or manager. While the coach is involved in many relationships which include, liaising with the management and other personnel of the sport organisation where s/he is employed, the governing body of the sport being coached, sport federations, the media and hosts of sport events, the most significant one may perhaps be the relationship with the athletes who s/he coaches. The present study examined student-athletes' perceptions towards their coaches' leadership behaviour from the perspective of selected biographical variables. The leadership behaviour was assessed using the Leadership Scale for Sports (LSS). The purpose was two-fold. Firstly, it was to establish whether participants' scores on the LSS were reliable. Secondly, to determine which biographical variables had an effect on the subscales of the LSS. Participants were 400 student-athletes from two universities in South Africa. Reliability of the LSS scores was determined by computing Cronbach's (1951) alpha which is a measure of internal consistency related to the interrelatedness of test items. An acceptable overall alpha value of .91 was computed. In terms of the biographical variables differences were only established between males and females with respect to *Training and instruction* and *Democratic behaviour*. It was concluded that the findings should be useful in giving a sense of the leadership preferences as well as what student-athletes expect of their coaches.

Keywords: Leadership, athletes, training and instruction, democratic behaviour, social support, autocratic behaviour.

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Introduction

In a sport context, the coach is often referred to as a leader or manager (Horn, 2008; Riemer, 2007; Kent & Chelladurai, 2001). Many researchers (e.g. Horn, 2008; Riemer, 2007; Kent & Chelladurai, 2001) in sport settings use the terms 'coach' and 'leader' interchangeably "reinforcing the presupposition that coaches are leaders" (Kellet, 1999:153). In this role the coach is responsible for

making important decisions such as selecting a team, developing strategies and employing tactics related to games and the management of coach personnel (Loughead, Hardy & Eys, 2006).

While the coach is involved in many relationships which include, liaising with the management and other personnel of the sport organisation where s/he is employed, the governing body of the sport being coached, sport federations, the media and hosts of sport events, the most significant may perhaps be the relationship with the athletes who s/he coaches. The leadership provided by the coach is instrumental in enhancing the ultimate performance of athletes and teams (Chelladurai & Saleh, 1980). In addition to contributing to the overall sport performance the coach also plays a significant role in the physical and psychological development of athletes (Horn, 2002; Gould, Dieffenbach & Moffett, 2002). In essence, a coach plays a major role in influencing the experiences and successes of her/his charges.

A number of theories have been used to form the framework to develop the concept of leadership (Northouse, 2012). Among the most cited and used leadership theories in sport is the Multidimensional Model of Leadership (MML) developed by Chelladurai and Carron (1978). This model was developed, based on elements of several leadership theories from other disciplines (Yashiro, 2008). The MML suggests that positive outcomes such as performance and satisfaction are possible if there is an alignment between the behaviour exhibited by the coach, the behaviour expected in the coaching situation and the behaviour preferred by the athletes. Emanating from the MML was the widely used Leadership Scale for Sport (LSS) developed by Chelladurai and Saleh (1980).

Five dimensions of coach leadership behaviour, namely *training and instruction* (aimed at improving athlete performance by emphasising training, teaching specific skills and coordinating training activities), *democratic behaviour* (allowing athlete involvement in decision making), *autocratic behaviour* (independent decision making by the coach), *social support* (demonstration of care of athletes' personal welfare, creation and maintenance of positive group atmosphere and strengthening interpersonal relations), and *positive feedback* (recognition of and reward for good performance) were identified in the LSS. These dimensions are believed to influence three states of leader behaviour; namely required, preferred, and actual (Dupuis, Bloom & Loughead, 2006). Sullivan and Kent (2003) summarise the LSS as the conceptualization of coaching behaviour which includes one direct task factor (training and instruction), two decision style factors (democratic and autocratic behaviour), and two motivational factors (social support and positive feedback).

Rationale for the study

Several studies (e.g Loughhead & Hardy, 2005; Kozub & Pease, 2001; Martin & Barnes, 1999) have been conducted using the LSS. However, most of the studies did not specifically examine the effect of selected demographic variables on the dimensions of the LSS. This study was an effort to extend the research on the LSS and add to the growing body of leadership research in sport and contribute to existing knowledge of leadership. The results of this study could help better identify athletes' preferred leadership behaviour of their coaches based on selected demographic variables. The findings may enable coaches to tailor their leadership behaviours through a better understanding of their athletes' preferences. Training programmes as well as different coaching styles could also be developed through an understanding of athletes' leadership preferences.

Problem statement

The leadership style of coaches contributes significantly to the success of an athlete or a team. What this suggests is that there is an intrinsic relationship between the leadership style adopted by a coach and leadership preferences of athletes. It is important therefore that in adopting a leadership style, a coach should be cognisant of the leadership preferences of athletes she/he is in charge of. By adapting to the preferences of athletes, coaches are likely to strengthen the relationship in terms of commitment, cooperation, respect friendship, dependence and power relations (Surujlal & Dhurup, 2011). The coach-athlete relationship is acknowledged as the "foundation of coaching" (Jowett, 2005: 412). Therefore, it stands to reason that this relationship should be strengthened. However, little is known about the effect of demographic variables such as age, gender, year of study and type of sport on the identified dimensions of the LSS. It is expected that such knowledge would assist the coach in creating a balance between the required, actual and preferred leadership behaviour in coaching.

In this study therefore the purpose was twofold. Firstly, it was to establish whether scores of participants on the LSS were reliable. Secondly, it was to determine which biographical variables had an effect on the subscales of the Leadership Scale for Sport. Specifically, this study addressed the following questions:

1. Is the internal consistency of the scores obtained from the LSS from a South African sample acceptable?
2. Is there a statistically significant gender effect on each of the subscales of the LSS?

3. Is there a statistically significant age effect on each of the subscales of the LSS?
4. Is there a statistically significant year of study effect on each of the subscales of the LSS?
5. Is there a statistically significant sporting code effect on each of the subscales of the LSS?

Methodology

Sample

A non-probability sampling procedure was used to administer 400 questionnaires to student-athletes at two universities in the Gauteng Province of South Africa to participate in the study. Of those who were approached two hundred and twenty one (n=221) completed and returned the questionnaires. For purposes of this study data were collected from athletes who participated competitively in sport and were eligible to participate in inter-university sports under the auspices of the South African Student Sport Union (Singh & Surujlal, 2006).

Instrument and procedure

A two-section questionnaire was used to collect data for the study. Section A of the questionnaire comprised questions requesting demographic information such as gender, age, number of years of competitive sport participation, year of study, type of sport, gender of coach, preference of coach gender and age, and win/loss record over the past season of the respondents. Section B of the questionnaire comprised the Leadership Scale for Sport (LSS) developed by Chelladurai and Saleh (1980). It is a 40-item scale made up of five subscales. The subscales are: (1) *Training and instruction* (13 items); (2) *Democratic behaviour* (9 items); (3) *Autocratic behaviour* (5 items); (4) *Social support* (8 items); and (5) *Positive feedback* (5 items). A few item statements from the original scale were adapted for the South African context. Participants responded on a Likert type scale anchored at 1 (Always) and 5 (Never). The scoring of each item was as follows: 5 = Never; 4 = Seldom (about 25% of the time); 3 = Occasionally (about 50% of the time); 2 = Often (about 75% of the time); 1 = Always. Each item was preceded by the statement: *I prefer my coach to ...* For instance, a typical *Training and instruction* subscale item was: *I prefer my coach to expect every athlete to carry out one's assignment to the last detail.* Similarly, an *Autocratic behaviour* item was: *I prefer my coach to plan relatively independent of the athletes.*

The questionnaires were administered to participants by trained fieldworkers. Participants were informed both verbally and through a covering letter of the

purpose of the study. It was also clarified that their participation was voluntary and could be discontinued at any time without repercussions, their responses would be confidential and their participation would remain anonymous. In all instances participants were identified at different stadia at which they trained. As far as possible the questionnaires were completed in the presence of the fieldworker after training sessions. In instances where respondents were unable to complete the questionnaire at the stadia, arrangements were made to collect the questionnaires at a later stage.

Reliability of the instrument

The reliability of the instrument was determined by computing Cronbach's (1951) alpha which is a measure of internal consistency related to the interrelatedness of test items (Schmitt, 1996). The LSS had a computed overall Cronbach alpha value of .91. This value was adjudged to be excellent based on the rule of thumb "... $\geq .9$ – **Excellent**, $\geq .8$ – Good, $\geq .7$ – Acceptable, $\geq .6$ – Questionable, $\geq .5$ – Poor, and $\leq .5$ – Unacceptable" (George & Mallery, 2003: 231). Also, the internal consistency of the scores obtained from the subscales was similar to those reported in the development of the LSS (Chelladurai & Saleh, 1980) (Table 1).

Table 1: Internal consistency estimates (Cronbach's alpha)

Subscale	Chelladurai & Saleh*			This study
	Study 1 (N = 102)		Study 2 (N = 223)	
	Preferred	Preferred		
Training and instruction	.76	.83	.93	.86
Democratic behaviour	.77	.75	.87	.75
Autocratic behaviour	.66	.45	.79	.48
Social support	.72	.70	.86	.65
Positive feedback	.79	.82	.92	.76

* Alpha values reported by Chelladurai and Saleh (1980).

Data analysis

The data were captured and analysed using the Statistical Package for Social Sciences (SPSS – version 19). The analyses were in the following order: 1) descriptive statistics were determined, 2) reliability of scores from the questionnaire was determined by computing Cronbach's (1951) coefficient alpha, 3) The effect of the different biographical variables on the LSS subscales was determined by either computing Analysis of Variance (ANOVA) or Multivariate Analysis of Variance (MANOVA). In computing ANOVA and MANOVA the researchers were conscious of the different assumptions related to these statistical methods such as homogeneity of variance as well as homogeneity of covariances (French, Macedo, Poulsen, Waterson, & Yu, 2012). For instance in computing homogeneity of variance, Levene's statistic

was determined while Box' M was calculated to establish the homogeneity of covariances. The outcome of these preliminary statistical analyses is presented in the results section.

Results

The results presented here are in the following order: first the demographic data of the participants are provided. Thereafter, the findings of the analyses involving the ANOVA and MANOVA are presented.

Demographics

There were 221 participants (males: 141; 63.8% and females: 80; 36.2%) whose ages ranged between 18 years and 60 years ($M = 23.8$, $SD = 6.0$). Most (70.6%) of the participants were in their first or second year of study at university. About half (46.6%) of the participants indicated that they played soccer. A more comprehensive detail of the biographical data is provided in Table 1.

Table 1: Participants' demographic data (n = 221)

Category	n	%	<i>M</i>	<i>SD</i>
Gender				
Male	141	63.8		
Female	80	36.2		
Age			23.8	5.97
18 – 25	197	89.1		
26 - 33	13	5.9		
34 - 41	7	3.2		
42 - 49	0	0		
50 +	4	1.8		
Years in competitive sport			4.7	2.31
1 Year	32	14.5		
2 Years	23	10.4		
3 Years	22	10.0		
4 Years	19	8.6		
5 Years	17	7.7		
6 Years	21	9.5		
More than 6 Years	87	39.4		
Year of study				
1st Year	80	36.2		
2nd Year	76	34.4		
3rd Year	56	25.3		
Postgraduate	9	4.1		

Sport

Soccer	103	46.6
Rugby	28	12.7
Cricket	18	8.1
Athletics	36	16.3
Netball	36	16.3

To establish the effect of gender on each of the subscales of the LSS, analysis of variance (ANOVA) was computed. Initially, the test for homogeneity of variance (Levene's statistic) was computed. Levene's statistic indicated that the variances involving each of the subscales were homogenous, *Training and instruction* [$F(1, 219) = 1.83, p = .178$]; *Democratic behaviour* [$F(1, 219) = 2.19, p = .140$]; *Autocratic behaviour* [$F(1, 219) = 0.83, p = .362$]; *Social support* [$F(1, 219) = 0.53, p = .465$]; and *Positive feedback* [$F(1, 219) = 0.60, p = .441$]. The ANOVA revealed that a statistically significant difference was between the participants' gender with respect to *Training and instruction* [$F(1, 219) = 4.398, p < 0.05$] and *Democratic behaviour* [$F(1, 219) = 8.264, p < 0.05$].

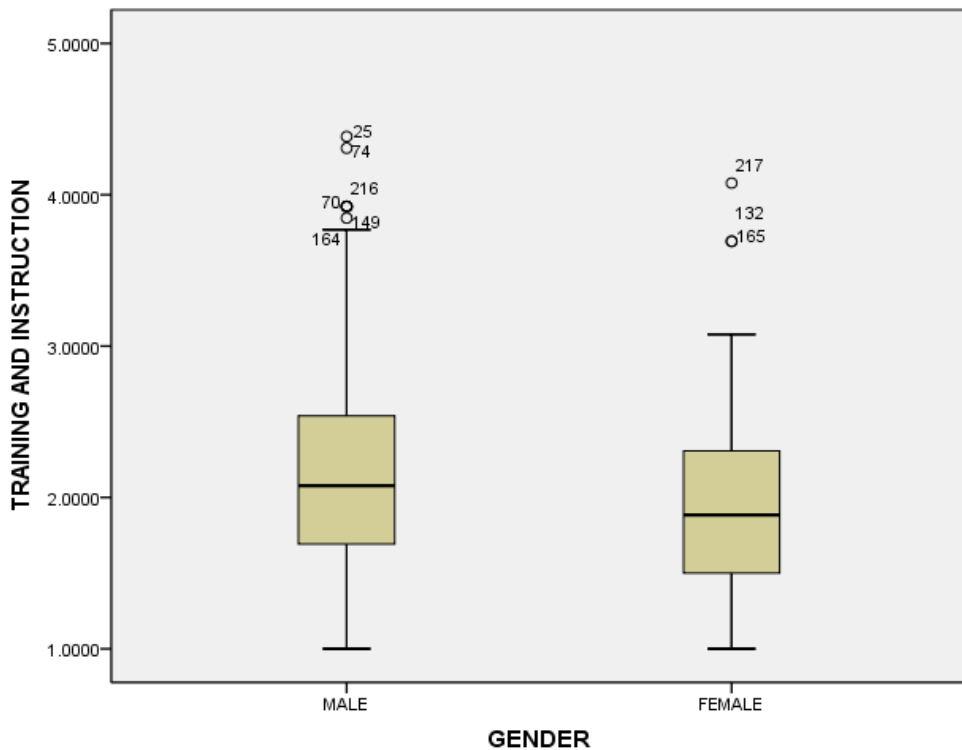


Figure 1: Gender distribution with respect to *Training and instruction*.

Regarding the *Training and instruction* subscale, it can be seen from Figure 1 that the males had higher mean scores than the females. Similarly, Figure 2

also shows that the males had higher mean scores than the females in respect of the *Democratic behaviour* subscale.

To determine the effect of the participants' ages on the LSS subscales MANOVA was computed. The null hypothesis that the observed covariance matrices of the dependent variables are equal across groups was accepted [Box's M (30, 1016.651) = 52.76, $p = .12$]. The null hypothesis that the error variance of the dependent variable is equal across groups (Levene's test of equality of error variance) was also accepted for all the subscales, *Training and instruction* [$F(3, 217) = 0.68, p = .566$]; *Democratic behaviour* [$F(3, 217) = 1.25, p = .293$]; *Autocratic behaviour* [$F(3, 217) = 1.75, p = .157$]; *Social support* [$F(3, 217) = 1.76, p = .157$]; and *Positive feedback* [$F(3, 217) = 2.33, p = .075$].

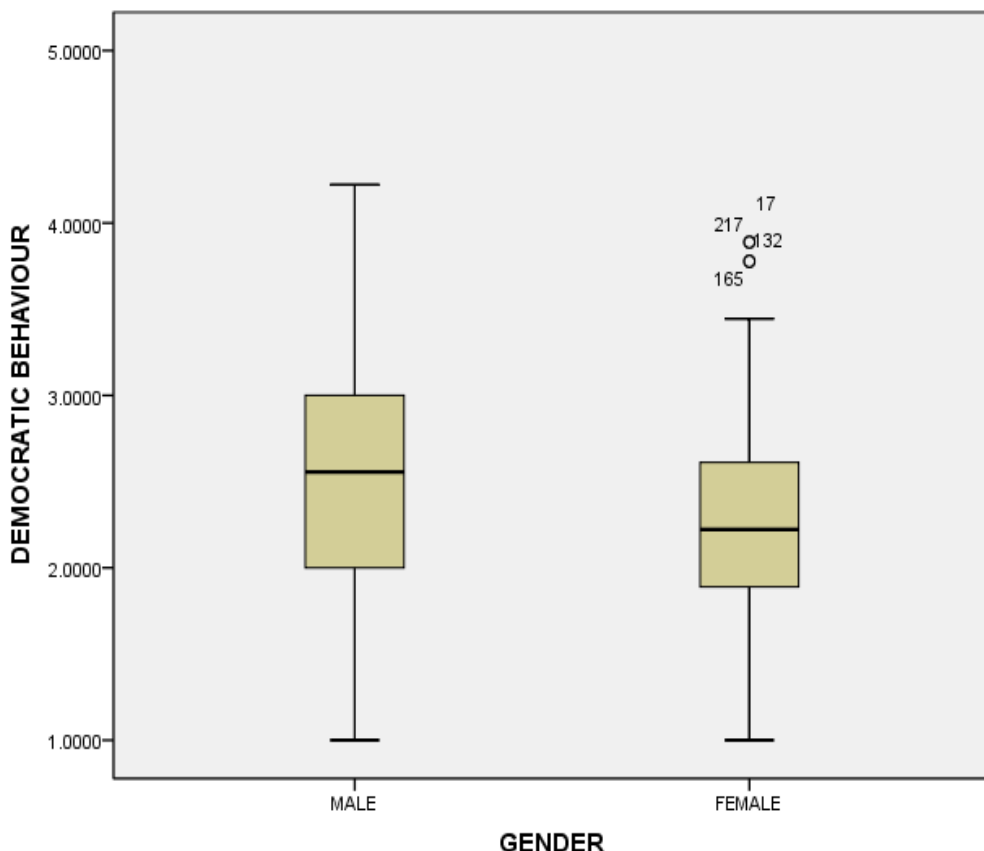


Figure 2: Gender distribution with respect to *Democratic behaviour*.

This implies that the variances were homogenous for all the five subscales. The multivariate tests revealed, however, that the model was not statistically significant [$F(15, 588.401) = 1.023, p = .429$; Wilk's $\lambda = .931$, partial $\epsilon^2 = .02$, Power = .63]. This suggests that age had no effect on the LSS subscales.

To determine the effect of the participants' year of study on the LSS subscales MANOVA was also computed. The null hypothesis that the observed covariance matrices of the dependent variables are equal across groups was accepted [Box's M (45, 2974.235) = 63.89, $p = .12$]. Similarly, the null hypothesis that the error variance of the dependent variable is equal across groups (Levene's test of equality of error variance) was accepted for four subscales: *Training and instruction* [F (4, 216) = 0.86, $p = .491$]; *Democratic behaviour* [F (4, 216) = 1.08, $p = .366$]; *Autocratic behaviour* [F (4, 216) = 0.27, $p = .896$]; *Social support* [F (4, 216) = 3.32, $p < .012$]; and *Positive feedback* [F (4, 216) = 0.36, $p = .838$]. This implies that the variances were homogenous for the four subscales with the exception of *Social support* which was statistically significant. The multivariate tests revealed that the model was not statistically significant [$F(15, 588.401) = 1.442, p = .123$; Wilk's $\lambda = .841$, partial $\epsilon^2 = .03$, Power = .82]. It was therefore concluded that the year of study had no effect on LSS subscales.

To determine the effect of the participants' sports on the LSS subscales a multivariate analysis of variance (MANOVA) was also computed. The null hypothesis that the observed covariance matrices of the dependent variables are equal across groups was accepted [Box's M (60, 23074.854) = 79.40, $p = .11$]. Also, the null hypothesis that the error variance of the dependent variable is equal across groups (Levene's test of equality of error variance) was accepted for four subscales except for *Social support*, *Training and instruction* [F (4, 216) = 0.86, $p = .491$]; *Democratic behaviour* [F (4, 216) = 1.08, $p = .366$]; *Autocratic behaviour* [F (4, 216) = 0.27, $p = .896$]; *Social support* [F (4, 216) = 3.32, $p < .012$]; and *Positive feedback* [F (4, 216) = 0.36, $p = .838$]. This implies that the variances were homogenous for the four subscales except for *social support* which was statistically significant.

The multivariate tests revealed, however, that the model was statistically significant [$F(20, 704.074) = 1.893, p = .011$; Wilk's $\lambda = .841$, partial $\epsilon^2 = .04$, Power = .95]. The test of between subjects - effects revealed however that there was no statistically significant effect of the sport with respect to the LSS subscales (Table 3). It may be observed from the table that *Democratic behaviour* was very close to being statistically significant.

Table 3: Tests of between-subjects effects

Dependent Variable	Type III Sum of Squares	df	M^2	F	p	Partial ϵ^2	Power
Training and instruction	2.588	4, 216	.647	1.341	.256	.024	.415
Democratic behaviour	4.723	4, 216	1.181	2.380	.053	.042	.681
Autocratic behaviour	3.112	4, 216	.778	1.369	.246	.025	.423
Social support	3.566	4, 216	.892	2.043	.090	.036	.604
Positive feedback	5.820	4, 216	1.455	2.143	.077	.038	.628

Discussion

Before commencing with any comprehensive data analysis, the internal consistency of the scores obtained from the LSS from a South African sample was determined. In doing this, the alpha values obtained in this study were compared with those reported in studies conducted by Chelladurai and Saleh (1980) when the LSS was at its developmental stage. The alpha values were indeed comparable. It was thus concluded that the internal consistency scores of the LSS from a South African sample were acceptable for further data analyses.

In this study a statistically significant gender difference was found only with respect to *Training and instruction* and *Democratic behaviour*. This implies that for males, the coach's leadership behaviour (a) is aimed at improving their performance and (b) allows participants to be involved in decision making was deemed important. These findings are in contrast to those reported in other parts of the world using the same instrument. For instance, in Turkey it was reported that "...the multivariate test was not significant for gender" (Yalcin, 2013: 165). Similarly, in Australia it was reported too that "... the results revealed an overwhelmingly high level of similarity in the coaching preferences between all athletes regardless of gender" (Shennan, Fuller & Speed, 2000: 389).

Regarding the age of athletes, it was reported in this study that age had no effect on the questionnaire subscales. During the literature search no studies were found that determined whether there were disparities with respect to the different subscales and ages. Studies which investigated the age variable focused on the relationship of this demographic variable with the coach's leadership style subscales (Mousavi & Meshkini, 2011).

With respect to participants' year of study it was again found that there was no statistically significant effect. This finding suggests that participants' level of study at university did not influence *Training and instruction*; *Democratic behaviour*; *Autocratic behaviour*; *Social support*; and *Positive feedback*. The finding also implies that coaches may only focus on the sport activities of their charges regardless of the level of study they are in.

Regarding the effect of the type of sport on the LSS subscales, there was also no statistically significant effect. This means that coaches' leadership was perceived to be similar irrespective of the sport participants were involved in. Specifically, whether participants were playing soccer, cricket or netball the coach's preferred leadership behaviour was not perceived as different. This finding is in contrast to findings of studies of Chelladurai (1990), Chelladurai (1993) and Kravig (2003) that have reported that athletes participating in

interactive sports had different preferences compared to those participating in mixed sports.

Implications for further research

The phenomenon 'leadership in sport' encompasses a wide spectrum of research opportunities. It would be interesting to investigate whether the results of the current study would differ compared to findings in other African countries. Given the fact that South Africa plays an important role on the global sport stage, results from such studies may be extremely relevant in providing a benchmark for coaches in South Africa.

Conclusion

It is certain that leadership behaviour in sport is a critical element that plays a significant role in influencing the performance and success of individuals and teams in sport. In this study males, in a sense, expressed their need for coaches to assist them in improving their performance as well as to ensure that they were included in the decisions the coaches made. The findings will be useful to coaches of university student-athletes in Gauteng Province who participated in this study. The present findings may also provide coaches with a sense of the leadership preferences and expectations of athletes.

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